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**PATENT APPLICATION**  
Attorney Docket: 10980239-1

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**  
**BEFORE THE BOARD OF APPEALS**

Applicant: Sheats, *et al.*  
Serial No.: 09/098,190  
Filed: 6/16/98  
For: Active Matrix Addressed Polymer LED Display  
Group Art Unit: 2673  
Examiner: Jeff Piziali

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**BRIEF FOR APPELLANT**

Hon. Commissioner of Patents  
and Trademarks  
Washington, D.C. 20231

Sir:

This is an appeal from the decision of the Primary Examiner dated 3/22/01, finally rejecting Claims 3 and 8 in the above-identified patent application.

**I. REAL PARTY IN INTEREST**

The real party in interest is Agilent Technologies having a place of business as indicated below.

**II. RELATED APPEALS AND INTERFERENCES**

There are no other appeals or interferences known to appellant, the appellant's legal representative, or assignee which will directly affect or be directly affected by or have a bearing on the Board's decision in this pending appeal.

**III. STATUS OF THE CLAIMS**

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Claims 3- 12 are currently pending in the above-identified patent application. In the Office Action dated 3/22/01, the Examiner rejected Claims 3 and 8 and indicated that the Action was final. The remaining claims have been allowed.

#### **IV. STATUS OF AMENDMENTS**

No amendments have been filed after the final rejection discussed above.

#### **V. SUMMARY OF THE INVENTION**

The present invention is a display based on organic light emitting diodes(OLEDs). The invention can be more easily understood with reference to Figures 1-4. Figure 1 is an electrical schematic drawing of a portion of a display. Figures 2 and 3 illustrate an array of OLEDs utilized in the display, and Figure 4 is a cross-sectional view of a portion of a display according to the present invention illustrating the manner in which the OLED array is bonded to a transistor array that is constructed on a substrate that is different from that on which the OLED is constructed. Referring to Figure 1 and the discussion thereof that begins on page 5 at line 9, each pixel[20, 25, 30, 35] in the display includes an isolation transistor[21], a driving circuit, and an OLED[24, 26, 34, 36]. The driving circuit stores a value that determines the magnitude of the light emitted by that pixel by placing the OLED in a conducting path between the first and second power terminals and controlling the current flowing through the OLED when so connected. Referring to Figures 2 and 3, and the discussion thereof that begins on page 5 at line 30, the OLEDs are part of an array[50] of OLEDs. The array of OLEDs is constructed on a flexible sheet[61] having first and second surfaces, the flexible sheet[61] being transparent to light of a first wavelength. A transparent first electrode layer[62] is in contact with the first surface. A light emitting layer[63] including an organic polymer is in contact with the first electrode layer[62]. A plurality of second electrodes[64], one such second electrode[64] corresponding to each of the OLEDs, is in contact with the light emitting layer[63]. Each second electrode[64] is an isolated conducting area that is brought into contact with a corresponding conducting area on the substrate containing the driving transistors. Referring to Figure 4 and the discussion thereof that begins on page 6 at line 20, each driving transistor is part of a transistor array having a

plurality of connection points[75] disposed on a surface, each connection point corresponding to one of the second electrodes in the array of OLEDs. The connection points are arranged such that each second electrode overlies the corresponding connection point when the array of OLEDs is properly aligned with the transistor array. The connection points are bonded to the corresponding second electrodes by a bonding layer.

## **VI. ISSUES**

A. Is Claim 3 patentable under 35 U.S.C. 103(a) over Jones (5,920,080) in view of Gu, *et al* (hereafter "Gu") (5,844,363)?

B. Is Claim 8 patentable under 35 U.S.C. 103(a) as being unpatentable over Jones(5,920,080) in view of Bulovic, *et al* (hereafter "Bulovic") (5,834,893) and Haskal, *et al* (hereafter "Haskal") (5,952,778)?

## **VII. GROUPING OF CLAIMS**

The claims are to be considered separately.

## **VIII. ARGUMENT**

**A. Rejection of Claim 3 under 35 U.S.C. 103(a) as being unpatentable over Jones view of Gu, *et al*.**

In making this rejection, the Examiner stated that Jones discloses a display having separate OLED and transistor arrays. Applicant disagrees. The display of Jones is constructed by depositing individual pixels on the transistor-containing substrate. The individual pixels are microcavities that are isolated from one another.

The Examiner admits that Jones does not teach a flexible OLED array. The Examiner looks to Gu for such a teaching and maintains that it would be obvious to use the array of Gu with the transistor array taught in Jones because the resulting display would be lighter in weight than the display taught in Jones.

First, the issue is not whether one can think of a reason to combine specific teachings of selected references to arrive at the present invention. To sustain a rejection under 35 U.S.C. 103, there must be evidence that a skilled artisan, confronted with the same problem as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed. An implicit, generalized finding that a person of ordinary skill in the art, faced with the same problems as the inventor, would have found the claimed combination obvious is insufficient. *Ecolochem Inc. v. Southern California Edison Co.*, 56 USPQ2d, 1065, 1069, CAFC, September 7, 2000.

Second, the rationale put forth by the Examiner for combining the references is flawed. The display of Jones is inherently lighter than the display that would be obtained by bonding a flexible display as taught in Gu to a transistor array as taught in Jones. The OLED part of the display taught in Jones is generated by depositing thin layers on the transistor containing substrate, and hence, represents a negligible part of the weight of the device. The OLED array of Gu is inherently heavier than the combined weight of the layers taught in Jones, since the flexible substrate for the OLED array of Gu must have sufficient thickness and dimensional stability to support the OLED array during fabrication and bonding to the transistor array.

Third, there is no teaching in either of the references with respect to how one would bond an OLED array constructed from the display elements of Gu to the transistor substrate of Jones. Jones depends on masked deposition of the OLED layers on the transistor array, and hence, is silent with respect to any method for aligning or bonding a separate OLED array. Gu is likewise silent as to how one would bond an array of OLEDs of the type described therein to a transistor array. At most Gu discussed connecting the demonstration devices taught therein to power using a probe (Figure 5 of Gu). Accordingly, the cited art does not provide the teachings needed to make the combination proposed by the Examiner.

**B. Rejection of Claim 8 as being unpatentable over Jones in view of Bulovic and Haskal.**

In making this rejection, the Examiner admits that Jones does not disclose expressly a flexible substrate array of OLEDs. However, according to the Examiner, Bulovic does disclose a flexible substrate array of OLEDs, wherein the OLEDs have sufficient flexure to allow each OLED to be connected to a corresponding one of the driving transistors when the array of OLEDs is pressed against the array of driving transistors. The Examiner cites column 2, lines 6-21 of Bulovic as supporting this assertion. At most, Bulovic teaches a substrate that can be flexible and transparent. There is no teaching in Bulovic with respect to the degree of flexibility of the substrate. Bulovic teaches exemplary substrates composed of polystyrene and aluminum foil. While aluminum foil has the required flexibility, it is hardly transparent. Since there is no discussion of the thickness or composition of the polystyrene, one cannot determine the degree of flexibility or light transmission. Since the device taught in Bulovic does not emit light through the substrate, no conclusion can be drawn about the light transmissive properties of the substrates with respect to the light generated by the device. It should also be noted that polystyrene is not impermeable to oxygen and water. Hence, Applicant submits that the Examiner has not met his burden of proof with respect to the teachings of a flexible substrate having the properties claimed in Claim 8.

Finally, Applicant wishes to point out that the OLEDs taught in Bulovic are designed to be fabricated on the substrate containing the driving circuitry as individual separate devices. Hence, Bulovic does not teach a separate OLED array. There is no teaching in Bulovic, or the other references, with respect to how one would connect such an array to a separate array of transistors.

The Examiner looks to Haskal as disclosing a flexible sheet comprising a material impermeable to water and oxygen. The Examiner specifically identifies element 8 shown in Figure 1 of Haskal, and the text at column 3, lines 19-22, as supporting this assertion. Element 8 is a glass base. This is hardly a material that satisfies the flexibility requirements of the claimed substrate. Haskal also teaches that element 8 may be constructed from a flexible substrate such as polyethylene terephthalate or polyvinyl acetate. The level of flexibility of these substrates is not indicated in the reference. Furthermore, the level of oxygen and moisture permeability of these materials is not provided. Hence, Applicant

submits that the Examiner has failed to meet his burden of proof in that the Examiner has not pointed to any teaching in the references that meet the limitations Claim 8.

Finally, the Examiner maintains that it would be obvious to combine the teachings of the three references because it would lead to a more "resilient display device". As noted above, it is not clear how one would combine the teachings of the references absent the specification of the present application as a guide. Second, motivation of providing an improved device is not sufficient to sustain a rejection under 35 U.S.C. 103. The mere fact that two or more references can be combined does not make the combination obvious unless the art also contains something to suggest the desirability of the combination (*In re Imperato*, 179 USPQ 730, 732; *Interconnect Planning Corp. v. Feil*, 227 USPQ 543, 551).

## VII. CONCLUSION

Appellants respectfully submit that for the reasons of fact and law argued herein, the decision of the Examiner in finally rejecting Claims 3 and 8 should be reversed.

I hereby certify that this paper (along with any others attached hereto) is being deposited with the United States Postal Service as first class mail with sufficient postage on the date signed below in an envelope addressed to: Hon. Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Respectfully Submitted,

A handwritten signature in black ink, appearing to read "Calvin B. Ward". The signature is fluid and cursive, with the first name "Calvin" being more prominent.

Calvin B. Ward  
Registration No. 30,896  
Date: May 16, 2001

IP Administration

Legal Dept., M/S 51UPD  
AGILENT TECHNOLOGIES  
P.O. Box 58043  
Santa Clara, CA 95052-8043  
Telephone (925) 855-0413  
Telefax (925) 855-9214

## **APPENDIX**

### **THE CLAIMS ON APPEAL:**

3. A display comprising a plurality of light emitting pixels, each pixel comprising an isolation transistor, a driving circuit, and an organic light emitting diode (OLED), said driving circuit storing a value that determines the magnitude of the light emitted by that pixel, said driving circuit placing said OLED in a conducting path between first and second power terminals, said isolation transistor connecting said driving circuit to a bit line when said isolation transistor is placed in a conducting state by the application of a logic signal to a word line, wherein said OLEDs are part of a flexible array of OLEDs, said array of OLEDs comprising:

a flexible sheet having first and second surfaces, said first and second surfaces being parallel to one another, said flexible sheet being transparent to light of a first wavelength;

a first electrode comprising a first electrode layer in contact with said first surface, said first electrode layer being transparent to light of said first wavelength;

a light emitting layer comprising an organic polymer in electrical contact with said first electrode layer; and

a plurality of second electrodes, one such second electrode corresponding to each OLED, each of said second electrodes comprising an isolated conducting area in electrical contact with said light emitting layer, said light emitting layer generating light of said first wavelength in a region adjacent to said second electrode when a potential difference is applied across said first and second electrodes, and wherein said isolation transistors are part of an array of transistors on a substrate that is separate from said flexible array of OLEDs.

8. A display comprising a plurality of light emitting pixels, said display comprising an array of driving transistors and a flexible array of OLEDs, said array of OLEDs having sufficient flexure to allow each OLED to be connected to a corresponding one of said driving

transistors when said array of OLEDs is pressed against said array of driving transistors, said array of OLEDs comprising:

a flexible sheet having first and second surfaces, said first and second surfaces being parallel to one another, said flexible sheet being transparent to light of a first wavelength, said flexible sheet comprising a material that is impermeable to water and oxygen;

a first electrode comprising a first electrode layer in contact with said first surface, said first electrode layer being transparent to light of said first wavelength;

a light emitting layer comprising an organic polymer in electrical contact with said first electrode layer; and

a plurality of second electrodes, one such second electrode corresponding to each OLED, each of said second electrodes comprising an isolated conducting area in contact with said light emitting layer, said light emitting layer generating light of said first wavelength in a region adjacent to said second electrode when a potential difference is applied across said first and second electrodes, wherein said isolation transistors are part of an array of transistors on a substrate that is separate from said flexible array of OLEDs.